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# CURRENT LITERATURE.

## BOOK REVIEWS.

### Rusts of Switzerland.

THREE NOTABLE WORKS on plant rusts have appeared within a year: KLEBAHN'S *Wirthswechselnde Rostpilze*, the first volume of SYDOW'S *Monographia Uredinearum*, and FISCHER'S *Die Uredineen der Schweiz*. Each of these works covers a distinct field, and in its own way marks advance in the elucidation of the world's rust flora, and in an understanding of the problems connected therewith. The last named work,<sup>1</sup> although embracing a limited region, is conceived upon such a broad plan, and carried out with so much completeness, that it serves as the best model yet produced for a uredineous manual.

A large number of the species found in Switzerland are cosmopolitan. Every species is described in detail, and with few unavoidable exceptions direct from specimens, and is also illustrated with outline drawings. The descriptions are especially full, embracing not only the usual characters, but those derived from the pycnidia, the peridial cells, and the germ pores. The illustrations are drawn to a uniform scale, and are skilfully made. Often a dozen or more teleutospores are shown. Usually uredospores are included, and always drawn in a normally upright position, a most commendable innovation. In most cases a transverse section of two or more peridial cells shows their varying thickness of wall and sculpturing, another helpful innovation.

The notes which follow the diagnoses, briefly stating how much is known of the life history of the species, are helpful and suggestive. The list of Swiss stations for each species is more especially of local value to collectors.

The systematic arrangement is essentially that of DIETEL in ENGLER and PRANTL'S *Pflanzenfamilien*. Under the genera the species are distributed by hosts and morphological characters, with a view to showing relationship. A general key on the same basis is provided, together with excellent indexes, and a full modern bibliography.

Three chapters are of unusual interest to the general mycologist. In one the distribution of the Uredineae in Switzerland is analyzed and discussed, taking into account the ecological factors controlling the hosts. In another the general classification and the grouping of species within the genera are considered in the light of the most probable hypotheses regarding the phylogenetic descent of the rusts. And in the third the difficult questions regarding the value of various morphological and biological characters for discrimination of species are presented.

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<sup>1</sup> FISCHER, ED., *Die Uredineen der Schweiz*. Beitr. z. Kryptogamenflora der Schweiz. II<sup>o</sup> imp. 8vo. pp. xciv + 590. figs. 342. Bern: J. K. Wyss. 1904. 20 francs.

This work by Dr. FISCHER, for which he has been preparing for more than a dozen years, is replete with new matter of great value and is altogether admirable.—J. C. ARTHUR.

#### MINOR NOTICES.

THE FOSSIL FRUITS from the lignites of Brandon, Vermont, are the subject of an important contribution by PERKINS.<sup>2</sup> In 1861 LESQUEREUX described twenty-one species from this locality, which he regarded as of approximately the same age as the Æningen stage of the Swiss Miocene. In 1902 KNOWLTON published a brief paper of forms from this locality which represents all we knew of this interesting flora up to the time of publication of the present paper. The deposits have been much obscured and inaccessible for a half century, until the coal famine of 1902, when the lignite came into demand locally as a substitute for coal. The state geologist, GEORGE H. PERKINS, was enabled to secure a magnificent collection of the fossil fruits during the mining operations, and the present paper contains the result of preliminary study of these collections. One hundred and eighteen species are recorded, and many new forms of more or less doubtful botanical affinities are described. These are largely included in the following new genera: *Monocarpellites* (11 spp.), *Hicoroides* (5), *Bicarpellites* (5), *Brandonia*, *Rubioides*, *Sapindoides* (6), and *Prunoides*. The illustrations consist chiefly of photographs of type specimens, which are perhaps less satisfactory in showing details than careful drawings. The flora is unique in the abundance and variety of its fruits, and it is to be hoped that future study by Dr. PERKINS will demonstrate with more precision the exact age of the formation containing them. The accompanying clays should be searched for leaf remains.—EDWARD W. BERRY.

POPULAR ACCOUNTS of soil inoculation for legumes devised by MOORE have attracted wide attention, so that it is of special interest to receive his own account.<sup>3</sup> The nitrogen is fixed by the tubercle-forming bacteria within their bodies. This was determined by cultures in flasks containing nutrient solutions without nitrogen. There was no increase of nitrogen in the solution, but a marked increase in the organisms themselves. In its biology the organism is therefore considered a parasite. Later the plant is able to overcome the parasite and profit by the nitrogen which has been fixed. When grown on nitrogenous media, it was found that the organism lost both its power of infecting leguminous plants and its power of fixing nitrogen. In non-nitrogenous media both of these properties were retained. The failure of NOBBES's attempts in Germany a few years ago to put upon the market pure cultures of this organism can probably be attributed to lack of recognition of this fact. As a result of these studies MOORE has devised

<sup>2</sup> PERKINS, GEO. H., Description of species found in the Tertiary Lignite of Brandon, Vermont. Rept. State Geologist, Vt. 1903-1904. pp. 174-212. pls. 75-81. 1904.

<sup>3</sup> MOORE, G. T., Soil inoculation for legumes, etc. U. S. Dept. of Agric., Bureau of Pl. Industry, Bull. 71, pp. 72. pls. 10. 1905.